WHAT IS CLAIMED IS:

1. A computer-implemented method for inserting digital data into a digital television (DTV) broadcast signal, the DTV signal comprising a plurality of frames, each frame comprising a plurality of data segments, the method comprising:

encoding the digital data as codewords; and

replacing data segments within the DTV signal with the codewords.

2. The method of claim 1 wherein the DTV signal comprises an American Television Standards Committee (ATSC) DTV signal.

3. The method of claim 2 wherein the step of encoding the digital data as codewords comprises:

dividing the digital data into bit sequences; and

encoding each bit sequence as a corresponding codeword selected from a finite set of codewords wherein:

each codeword corresponds to a specific bit sequence,

the codewords are all of the same length, and

each codeword is longer than its corresponding bit sequence.

4. The method of claim 3 wherein the codewords in the finite set are orthogonal to each other.

5. The method of claim 3 wherein the bit sequences are all of the same length.

6. The method of claim 3 wherein the codewords in the finite set are a same length as the data segments.

7. The method of claim 3 wherein the step of replacing data segments with codewords comprises:

replacing each data segment with at least two codewords.

8. The method of claim 3 wherein:

each bit sequence is N bits long, and

there are 2^N codewords corresponding to the bit sequences.

9. The method of claim 3 wherein the step of encoding each bit sequence as a corresponding codeword comprises:

selecting the codeword from a lookup table which matches bit sequences with their corresponding codewords.

10. The method of claim 3 wherein each codeword represents not more than three bits of digital data.

11. The method of claim 3 wherein each codeword comprises multi-amplitude symbols.

12. The method of claim 2 wherein the step of replacing data segments with codewords comprises:

selecting data segments according to their numerical position within a frame; and

replacing only the selected data segments with codewords.

13. The method of claim 2 wherein the step of replacing data segments with codewords comprises:

determining whether a data segment is unused; and

replacing only unused data segments with codewords.

14. The method of claim 1 further comprising:

broadcasting the DTV signal.

15. The method of claim 14 further comprising:

receiving the broadcast DTV signal; and

recovering the digital data from the received DTV signal.

16. A method for recovering digital data from a broadcast digital television (DTV) signal, comprising:

receiving a broadcast DTV signal comprising a plurality of frames, each frame comprising a plurality of data segments, wherein at least one data segment has been replaced by at least one codeword representing digital data;

selecting the data segments which have been replaced by codewords; and

recovering the digital data from the selected data segments.

17. The method of claim 16 wherein the DTV signal comprises an American Television Standards Committee (ATSC) DTV signal.

18. The method of claim 17 wherein:

each codeword is selected from a finite set of codewords wherein:

each codeword corresponds to a specific bit sequence,

the codewords are all of the same length, and

each codeword is longer than its corresponding bit sequence; and

the step of recovering the digital data from the selected data segments comprises

recovering the bit sequences from the selected data segments.

19. The method of claim 18 wherein the codewords in the finite set are a same length as the data segments.

20. The method of claim 18 wherein the step of recovering the bit sequences from the selected data segments comprises:

identifying which of the data segments in the received DTV signal have been replaced by codewords; and

for data segments identified as having been replaced by codewords:

correlating the data segment against a template for each codeword in the finite set of codewords; and

selecting the codeword corresponding to the template which produces the strongest correlation peak.

21. The method of claim 20 wherein the template for a codeword is a matched filter for the codeword.

22. The method of claim 20 wherein:

only preselected data segments have been replaced by codewords, and the data segments are preselected according to their numerical position within a frame; and

the step of identifying which of the data segments in the received DTV signal have been replaced by codewords comprises determining which of the data segments occupy the preselected numerical positions within the frame.

23. The method of claim 20 wherein:

the DTV signal includes a field synchronization segment which repeats once every N segments;

only preselected data segments have been replaced by codewords, and the data segments are preselected according to their numerical position with respect to the field synchronization segment; and

the step of identifying which of the data segments in the received DTV signal have been replaced by codewords comprises:

correlating the data segments against a template for the field synchronization segment;

accumulating the correlations to produce N partial sums, each partial sum reflecting a sum of peaks of every Nth correlation;

determining which of the N partial sums is the largest to identify the field synchronization segment; and

determining which of the data segments occupy the preselected numerical positions with respect to the field synchronization segment.

24. The method of claim 20 wherein:

the DTV signal includes a field synchronization segment which repeats once every N segments;

only preselected data segments have been replaced by codewords, and the data segments are preselected according to their numerical position with respect to the field synchronization segment; and

the step of identifying which of the data segments in the received DTV signal have been replaced by codewords comprises:

correlating the data segments against a template for the field synchronization segment;

generating N counts from the correlations, each count reflecting a number of times every Nth correlation exceeds a threshold;

determining which of the N counts is the largest to identify the field synchronization segment; and

determining which of the data segments occupy the preselected numerical positions with respect to the field synchronization segment.

25. A DTV transmitter device for inserting digital data into a digital television (DTV) broadcast signal, the DTV signal comprising a plurality of frames, each frame comprising a plurality of data segments, the DTV transmitter device comprising:

means for encoding the digital data as codewords; and

means for replacing data segments within the DTV signal with the codewords.

26. The DTV transmitter device of claim 25 wherein the DTV signal comprises an American Television Standards Committee (ATSC) DTV signal.

27. The DTV transmitter device of claim 26 wherein the means for encoding the digital data as codewords comprises:

means for dividing the digital data into bit sequences; and

means for encoding each bit sequence as a corresponding codeword selected from a finite set of codewords wherein:

each codeword corresponds to a specific bit sequence,

the codewords are all of the same length, and

each codeword is longer than its corresponding bit sequence.

28. The DTV transmitter device of claim 27 wherein the codewords in the finite set are orthogonal to each other.

29. The DTV transmitter device of claim 27 wherein the codewords in the finite set are a same length as the data segments.

30. The DTV transmitter device of claim 27 wherein:

each bit sequence is N bits long, and

there are 2^N codewords corresponding to the bit sequences.

31. The DTV transmitter device of claim 26 wherein the means for replacing data segments with codewords is further for:

selecting data segments according to their numerical position within a frame; and

replacing only the selected data segments with codewords.

32. The DTV transmitter device of claim 26 wherein the means for replacing data segments with codewords is further for:

determining whether a data segment is unused; and

replacing only unused data segments with codewords.

33. A DTV receiver device for recovering digital data from a broadcast digital television (DTV) signal, comprising:

means for receiving a broadcast DTV signal comprising a plurality of frames, each frame comprising a plurality of data segments, wherein at least one data segment has been replaced by at least one codeword representing digital data;

means for selecting the data segments which have been replaced by codewords; and

means for recovering the digital data from the selected data segments.

34. The DTV receiver device of claim 33 wherein the DTV signal comprises an American Television Standards Committee (ATSC) DTV signal.

35. The DTV receiver device of claim 34 wherein:

each codeword is selected from a finite set of codewords wherein:

each codeword corresponds to a specific bit sequence,

the codewords are all of the same length, and

each codeword is longer than its corresponding bit sequence; and

the means for recovering the digital data from the selected data segments comprises means for recovering the bit sequences from the selected data segments.

36. The DTV receiver device of claim 35 wherein the codewords in the finite set are orthogonal to each other.

37. The DTV receiver device of claim 35 wherein the bit sequences are all of the same length.

38. The DTV receiver device of claim 35 wherein the codewords in the finite set are a same length as the data segments.

39. The DTV receiver device of claim 35 wherein the means for recovering the bit sequences from the received DTV signal comprises:

means for identifying which of the data segments in the received DTV signal have been replaced by codewords; and

for data segments identified as having been replaced by codewords:

means for correlating the data segment against a template for each codeword in the finite set of codewords; and

means for selecting the codeword corresponding to the template which produces the strongest correlation peak.

40. The DTV receiver device of claim 39 wherein the template for a codeword is a matched filter for the codeword.

41. The DTV receiver device of claim 39 wherein:

only preselected data segments have been replaced by codewords, and the data segments are preselected according to their numerical position within a frame; and

the means for identifying which of the data segments in the received DTV signal have been replaced by codewords comprises means for determining which of the data segments occupy the preselected numerical positions within the frame.

42. The DTV receiver device of claim 39 wherein:

the DTV signal includes a field synchronization segment which repeats once every N segments;

only preselected data segments have been replaced by codewords, and the data segments are preselected according to their numerical position with respect to the field synchronization segment; and

the means for identifying which of the data segments in the received DTV signal have been replaced by codewords comprises:

means for correlating the data segments against a template for the field synchronization segment,

means for accumulating the correlations to produce N partial sums, each partial sum reflecting a sum of peaks of every Nth correlation,

means for determining which of the N partial sums is the largest to identify the field synchronization segment, and

means for determining which of the data segments occupy the preselected numerical positions with respect to the field synchronization segment.

43. The DTV receiver device of claim 39 wherein:

the DTV signal includes a field synchronization segment which repeats once every N segments;

only preselected data segments have been replaced by codewords, and the data segments are preselected according to their numerical position with respect to the field synchronization segment; and

the means for identifying which of the data segments in the received DTV signal have been replaced by codewords comprises:

means for correlating the data segments against a template for the field synchronization segment,

means for generating N counts from the correlations, each count reflecting a number of times every Nth correlation exceeds a threshold,

means for determining which of the N counts is the largest to identify the field synchronization segment, and

means for determining which of the data segments occupy the preselected numerical positions with respect to the field synchronization segment.

44. A DTV receiver device for recovering digital data from a broadcast digital television (DTV) signal, comprising:

a front end for receiving a broadcast DTV signal comprising a plurality of frames, each frame comprising a plurality of data segments, wherein data segments have been replaced by codewords representing digital data and the codewords are selected from a finite set of codewords; and

a bank of correlators coupled to the front end for correlating the data segments against templates for codewords from the finite set of codewords.

45. The DTV receiver device of claim 44 wherein the DTV signal comprises an American Television Standards Committee (ATSC) DTV signal.

46. The DTV receiver device of claim 45 wherein:

each codeword is selected from a finite set of codewords wherein:

each codeword corresponds to a specific bit sequence,

the codewords are all of the same length, and

each codeword is longer than its corresponding bit sequence.

47. The DTV receiver device of claim 45 wherein the template for a codeword is a matched filter for the codeword.

48. The DTV receiver device of claim 45 further comprising:

a comparator coupled to the bank of correlators for determining which of the correlations produced by the bank of correlators has the strongest peak.

49. The DTV receiver device of claim 45 wherein the front end comprises:

an antenna;

a mixer coupled to the antenna for downconverting the received DTV signal; and

a sampler coupled between the mixer and the bank of correlators for sampling the downconverted DTV signal.

50. The DTV receiver device of claim 49 wherein the sampler includes:

an I channel and a Q channel for producing I and Q samples of the downconverted DTV signal.

51. The DTV receiver device of claim 45 wherein

the front end comprises a sampler for sampling the DTV signals; and

each correlator within the bank of correlators comprises:

a tap delay line having a parallel output for receiving and storing samples of a data segment; and

a multiply and sum device coupled to the parallel output of the tap delay line for correlating the data segment against a template for a codeword.

52. The DTV receiver device of claim 51 wherein the tap delay line stores samples for an entire data segment.

53. The DTV receiver device of claim 45 further comprising:

a field synchronization correlator coupled to the antenna for correlating the data segments against a template for a field synchronization segment, wherein the DTV signal includes a field synchronization segment which repeats once every N segments;

a bank of accumulators coupled to the field synchronization correlator for accumulating the correlations to produce N partial sums, each partial sum reflecting a sum of peaks of every Nth correlation;

a comparator coupled to the bank of accumulators for determining which of the N partial sums is the largest to identify the field synchronization segment; and

a counter coupled to the antenna and the comparator, for determining a numerical position of data segments with respect to the field synchronization segment, wherein only preselected data segments have been replaced by codewords, and the data segments are preselected according to their numerical position with respect to the field synchronization segment.

54. The DTV receiver device of claim 45 further comprising:

a field synchronization correlator coupled to the antenna for correlating the data segments against a template for a field synchronization segment, wherein the DTV signal includes a field synchronization segment which repeats once every N segments;

a bank of counters coupled to the field synchronization correlator for generating N counts from the correlations, each count reflecting a number of times every Nth correlation exceeds a threshold;

a comparator coupled to the bank of counters for determining which of the N counts is the largest to identify the field synchronization segment; and

a counter coupled to the antenna and the comparator, for determining a numerical position of data segments with respect to the field synchronization segment, wherein only preselected data segments have been replaced by codewords, and the data segments are preselected according to their numerical position with respect to the field synchronization segment.

55. The DTV receiver device of claim 45 wherein:

the front end comprises a sampler for sampling the DTV signals; and

the bank of correlators comprises a DSP processor programmed to correlate the data segments against templates for the codewords.